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UNIVERSITY OF MICHIGAN
DENTIST

IN THE

MIDDLE AGES

DENTISTRY

(back cover)

[redacted]

Dear Doctor,

You probably remember the story about the three blind men and the elephant:

> One bumped into the elephant's leg and said—
> "Why, the elephant is just like a tree."
>
> Another grabbed the elephant's trunk and cried—
> "Oh no! The elephant is more like a snake."
>
> The third stroked the elephant's side and said—
> "You're both wrong. This rough surface is just like the wall of my house."

And they never knew what the elephant really looked like.

If you have never used our services, you have no way of knowing how complete our laboratory is. Each of our departments contribute to the whole—which means fast, efficient and complete service to you. Try us and find out for yourself!

Sincerely,

[redacted]

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A MAGAZINE FOR DENTISTS, DENTAL ASSISTANTS, AND DENTAL HYGIENISTS

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RED SPEED-UP IN THE WAITING ROOM:

Dentistry Under Communism

by Walter Henry Nelson

Glass-blowers, brass instrument players, and others who *really* need them are the only patients who get gold teeth in Red-run Czechoslovakia, according to a directive of the Communist National Bank of Prague. Information reaching Radio Free Europe and the Free Europe Committee reveals that the precious metals shortage is so severe in Soviet-dominated Central and Eastern Europe as to make the strictest economy measures necessary.

Economy considerations hold true not only for precious metals, however. In Poland, dental materials shortages are so severe the regime has ordered dentists to apply the "three times and you're out" rule to patients.

Patients visiting their dentist for the third time are surprised to hear that there will be no further appointment for them. The patient's last chance to have the diseased tooth extracted comes on the third visit, for treatment which might save the tooth cannot be "unnecessarily prolonged."

The acute shortage of fillings and artificial teeth of material other than gold—as well as the virtually total prohibition of gold itself—has created a dangerous black market for the practitioner, who often obtains his materials from industrial workers, who, in turn, have stolen it at the factory. This, of course, necessitates preparation of the material by the dentist. The danger of detection is acute, especially when we remember that stealing a little piece of scrap metal for such purposes would be considered "economic sabotage" and be punishable by a sentence of twenty-five years in prison.

Throughout the Soviet orbit, the Red speed-up has hit the waiting room, with physicians and dentists alike subordinated to the only Communist consideration—fulfillment of the overall economic plan. Patients are important only insofar as their ailments detract from their usefulness.

The speed-up affects not only the patient but the dental

practitioner himself. When medical and dental services in Soviet-run Europe were nationalized, the dentist became a state employee whose salary, place, and mode of work are dictated by the regime.

Dentistry in Bulgaria

A Bulgarian dentist who recently escaped from that captive country told a Radio Free Europe correspondent of his work at a dental clinic serving railway employees. Malnutrition, overwork, and generally lowered health standards have brought about a high incidence of dental ills. Despite this, the dentist reveals that he was unable to treat his patients satisfactorily. On paper, he reports, the Communist health system looks good, but in actuality, fails to provide the Iron Curtain peoples with the minimum help needed to sustain good health.

Treating an average of twenty persons a day, he knew the time alloted to each patient was entirely insufficient. Such common needs as plaster, cotton, and alcohol were often lacking. When this happened, he was simply forced to shut down and await a new shipment from the state supply houses.

Occasionally, a dentist will oblige a friend with a gold filling if the patient supplies the material.

Such considerations make dentistry a hazardous profession for today's conscientious Iron Curtain practitioner. With state clinics generally supplying poor treatment, many a good dentist is forced to resort to the black market for supplies. These are extremely expensive and entirely illegal, with metals often purloined from factories.

Information reaching Radio Free Europe reveals that high party and government officials as well as others favored by the Red regime receive preferential treatment at clinics specially reserved for them. There are no shortages for such officials. The rigidly stratified society of the alleged "classless" Communist world supplies them with all they require.

A Czech Clinic

A young Czechoslovak dental technician, who recently escaped from behind the Iron Curtain, told Radio Free Europe of the "model" dental clinic in which he worked. Located in Znojmo, Czechoslovakia, it is regularly hailed by the Red press as the example to be followed by all others. The dental technician's story, which is confirmed by other accounts Radio Free Europe has received, is different. Not only does his tale show up the conditions existing in even a *model* dental clinic, but it once again highlights the fallaciousness of Red statistics and the falsity of the articles in the Red press.

Chief dentist of the Znojmo clinic is an elderly and generally respected dentist, Doctor Vladimir Rotrekl, who was educated in pre-Communist days and therefore escaped the generally low repute in which newly Communist-educated dentists are held.

The clinic includes a children's section, again headed by a competent pre-Communist dentist, Doctor Karl Bruchta. It is he, the dental technician told Radio Free Europe, who instituted compulsory preventive examinations of all school children in the region, a consideration rare in to-

"MISCAST — DAMMIT!"

"I GUESS IT'S GENUINE — BUT I WAS SO SURPRISED WHEN THE GUY FINALLY SETTLED HIS BILL, I DIDN'T KNOW WHAT TO THINK."

day's Soviet-run Europe. A preparation, allegedly another "Soviet Russian invention," designed to retard tooth decay, was painted on all the children's teeth. The technician reports that the clinic received extravagant praise from the Communist governmental authorities for instituting these measures. It is his opinion that they praised less for humanitarian reasons than because the treatment again gave the Red propagandists an opportunity to trumpet about the "generous" aid which Soviet science has given the people of Czechoslovakia and the "eternal gratitude" the captive peoples should show their Russian "benefactors."

After the propagandists had finished shouting, Doctor Bruchta found to his dismay that the Soviet preparation had brought about dangerous gum inflammations and extreme toothaches. These, however, were excused with the remark that tooth decay and a gum condition had set in prior to treatment, although Doctor Bruchta and other professionals at the clinic believed that they had been given a defective preparation to use.

Even this unfortunate error did not cause the Communist authorities much concern. For the officials, the technician says, are interested mainly in percentage points indicating an "overfulfillment of the norm" and an increase in numbers of patients treated by the clinic. The tooth decay caused by the Soviet medicine produces just these desired statistics. Again the propagandists could sing the praises of nationalized dental practice, which treats "an ever-increasing number of people."

Referring to the personnel at the clinic, the technician reports that only one of the dentists employed there continues to operate a private practice of his own. This man, Doctor Lezal, is also the only pro-Communist there. His private practice and high extra income depend largely on the fact that he treats party and government officials having access to otherwise unobtainable materials.

Despite the fact that a nine-hour working day is called for, dentists and technicians first must "reach their norm," whether this calls for unpaid overtime or not. The norm varies, but to the technician's recollection, a typical norm for laboratory workers was the production of forty-six sets of complete dentures a month. Separate operations were estimated in minutes, with the preparation of a metal molar crown reckoned at one hour and a metal incisor crown at eighty minutes. Towards the end of the month, the clinic prepared charts reporting the exact "norm fulfillment" of each worker and department.

The exemplary record of the Znojmo clinic, which rarely fell beneath 150 per cent of plan fulfillment and which often reached 200 per cent, is due largely to "padding." The administration, finding itself short in terms of actual dental work performed, reported a paper increase of several percentage points in administrative or household work.

The padding, the emphasis on quantity at the expense of quality, the materials shortages, the newly-graduated and largely incompetent dentists and medical technicians, all add to the failing health standards of Iron Curtain populations.

Finding himself reduced to the status of government employee, the Central and East European dentist could easily fall into the lethargy and dispiritedness which the Red rulers would impose upon him. Similarly, the harassed, overworked and badgered citizen is bludgeoned by Communist propagandists and secret police terrorists. Recognizing the fact that the 70,000,000 freedom-loving people of newly-Communized Poland, Czechoslovakia, Hungary, Romania, and Bulgaria represent a potential and very real danger to Soviet ambitions, the Kremlin planners have placed high on their priority list the job of integrating and consolidating these "human factors."

It is clear that these millions, located in that most strategic area of the world which stretches from the Baltic to the Mediterranean and which reaches from the U. S. S. R. to West Europe, must be kept on the side of the Free World.

One of the most effective attempts at supplying the captive millions with the truth, hope, and encouragement they need to continue resisting the Kremlin poison is Radio Free Europe. Today it roars out over twenty-nine powerful short and medium wave transmitters from West Germany to Portugal. Radio Free Europe's medical broadcasts report the latest advances made by Western medical research and help the enslaved peoples directly by advising Iron Curtain physicians and dentists how best to use the few materials available to them.

At the time of its founding, such leading Americans as Berlin Airlift hero Gen. Lucius D. Clay; the then President of Columbia University, Dwight D. Eisenhower, and former U. S. Ambassador to Japan, Joseph C. Grew, saw the need of obtaining the widest possible public support for this privately operated venture. As a result, the Crusade for Freedom was organized and recently, sponsored by the American Heritage Foundation, brought out the largest evidence of public support in Crusade history. Behind the Iron Curtain, the enslaved peoples take heart. Over R. F. E., they learn that great American professional groups such as the American Dental Association—along with scores of other fraternal, civic, veteran, and similar organizations—back their aspirations for peace and freedom.

The Hydraulic-Turbine Dental Handpiecce

Photos and text by Authenticated News

A hydraulic-tubine dental handpiece which attains a speed of 61,000 r.p.m. has been developed at the National Bureau of Standards. At this speed, very low cutting pressure is required and dental enamel can be cut rapidly with a minimum of vibration and heating. By positioning the turbine in the head of the handpiece and connecting it directly to the cutting tool, the mechanical difficulties involved in the use of high rotational speeds with the conventional belt-and-gear propelled cutting tools have been eliminated. Besides making possible more efficient cutting of tooth structures and reducing the time spent by the patient in the dental chair, the hydraulic-turbine handpiece[1] also promises to be of considerable utility in other fields where small amounts of hard materials must be removed by grinding, as in tool and die making.

The hydraulic handpiece was designed and constructed by Doctor R. J. Nelsen of the American Dental Association Research Fellowship at the Bureau, and C. E. Pelande and J. W. Kumpula of the National Bureau of Standards staff. The project was part of a program of dental research which National Bureau of Standards has been conducting in cooperation with the American Dental Association and the dental services of the Army, the Air Force, the Navy, and the Veterans Administration.

At present the maximum speed of conventional dental cutting instruments is about 6,500 r.p.m. Because of the small size of dental burs, this rate of rotation gives too low a linear speed for efficient cutting of tooth structures. For example, a steel bur can remove the same amount of material in two seconds at 12,000 rpm as it can in approximately thirty seconds at 2,000 r.p.m.[2]. However, in spite of the disadvantages of using low rotational speeds, dentists have hesitated to use higher speeds with the conventional gear-type handpiece because of the excessive vibration and heat developed and the potential hazard to the patient caused by the high inertia of the revolving instrument.

1. For further technical details, see "Hydraulic Turbine Contra-angle Handpiece," by Robert J. Nelson, Carl E. Pelander, and John W. Kumpula, *J. Am. Dental Assoc.*, 47: 324; 1953.

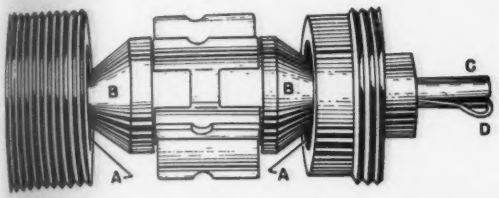
2. "Temperatures Developed in Rotating Dental Cutting Instruments, by Donald C. Hudson and William T. Sweeney, *J. Am. Dental Assoc.*, 48: 127; 1954.

Evaluation of the high-speed dental handpiece as a tool in operative dentistry has been carried out at the National Bureau of Standards with the cooperation of the American Dental Association. Note that the belt-and-pulley connection of the conventional dental handpiece (upper left) is replaced by a length of flexible coaxial tubing. At lower left is a mobile cabinet which contains the fluid pump, a reservoir tank, a solenoid valve for instantaneous control, and distribution lines.

Vibration Is Minimized

Several types of dental rotary cutting instruments using air or water as the motive power have been constructed in the past, but each of these was designed for the straight dental handpiece, and each required that a gear-type contra-angle handpiece be attached. The instrument developed at National Bureau of Standards is designed to eliminate completely gears within the handpiece since the turbine is placed in the head of the contra-angle. This makes it possible to overcome many of the disadvantages of high rotary speed in cavity preparation by taking advantage of the smoothness and other characteristics inherent in hydraulic systems. Thus, vibration is minimized; and the high speed stream of fluid passing over the turbine and shaft acts as a coolant so that overheating is prevented in spite of the high rotational speed developed.

A further advantage of the hydraulic handpiece is that even while rotating at top speed, the cutting instrument can be stopped immediately by placing a finger abruptly against its edge. Then, as soon as the disk is released, it will start rotating again. This means that if the operator should press too heavily on the cutting tool or if the tool should happen to catch or bind in some manner that would be hazardous with the ordinary handpiece, the hydraulic instrument will automatically stop rotating. Because of the extremely light pressures used for cutting, there is considerably less strain on the operator. Furthermore, the cutting tools do not climb or roll out of the cavity as do those used in the slower rotating instruments. While some adjustment in the dentist's operating procedure is necessary, the



Comparative size and appearance of the hydraulic-turbine dental handpiece (top and center) developed at the National Bureau of Standards and the conventional contra-angle handpiece (bottom) attached to a straight handpiece and wrist joint.

instrumentation is bascially the same as his present methods, and therefore the dentist requires no special training in its use.

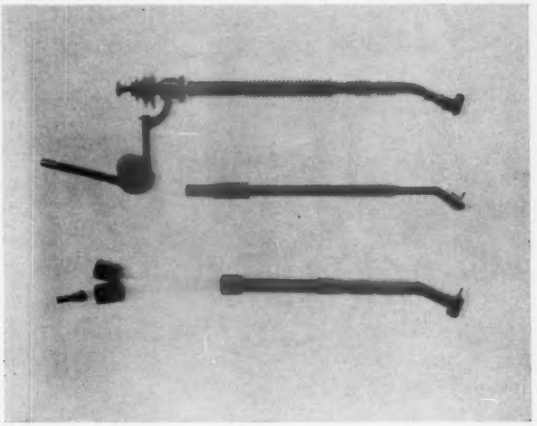
The overall size and shape of this handpiece are within the general proportions of the conventional gear-driven contra-angle handpiece. The turbine shaft is designed so that the hollow shaft of the cutting instrument fits over it. A spring key attachment on the turbine shaft fits into a keyway in the cutting-instrument shaft, and the centrifugal force developed by the rotating turbine causes this spring to lock the cutting instrument in place. When the shaft is still, the cutting instrument can be easily attached or removed.

The turbine has six notched blades fixed to the shaft and measures 7.5 mm. in diameter and 4.8 mm. in length. Although steel ball bearings have been used in some models, they are rather harsh and noisy in this application. Various combinations of low-friction plastic materials in bearings and journals have proved much more satisfactory as they are quieter in operation and do not require lubrication.

The Hydraulic System

The associated hydraulic system consists of a mobile cabinet which contains a fluid pumping mechanism, a reservoir tank, a pressure switch, a solenoid valve, and distribution lines. The contra-angle handpiece is connected to a flexible coaxial double tubing. The three-eighth-inch inside tube carries the propellent fluid (water under pressure) to the contra-angle handpiece, while the five-eighth-inch outer tube carries the spent fluid back to the reservoir. The tubes join with the direct line from the pump and the line to the reservoir tank. A constant-volume pump, close-coupled to a half-horsepower electric motor, is used. To minimize undesirable motor noise, the pumping equipment is enclosed in a sound-insulated cabinet.

The unit is self-contained and needs only to be connected to an electrical outlet for operation. The fluid is stored in the reservoir and is used over and over; hence the unit requires no adjustment during normal use. To stop the turbine momentarily, the



Turbine assembly of the high-speed dental handpiece developed at the National Bureau of Standards. This model uses plastic bearings (A) and plastic journals (B). The turbine shaft (C) contains a spring key attachment (D) which engages a keyway on the shaft of the cutting tool.

operator steps on a special tube containing fluid. The force exerted closes a pressure switch, thus opening a solenoid value which allows the propellent to bypass the turbine and to return directly to the reservoir. While the instrument is being used, the motor and pump operate continuously and the handpiece is energized as needed by the operator. The motor is controlled by a switch located on the side of the unit.

Grinding tools such as points and disks of diamond and silicon carbide have been found to cut with exceptional efficiency when used with the hydraulic handpiece. However, milling cutters like the steel and carbide burs of current design do not function well at such extremely rapid rates of cutting. It is believed that the design of the cutting blades of all burs will have to be modified before they can be used at the rotational speeds of this handpiece.

FULL VALUE RECEIVED

Into the office one day came a youth

And asked, "What's your fee for pulling a tooth?"

"Five dollars is all," was the dentist's reply.

"For a few seconds' work, your fee is too high."

Said the dentist, "OK, we won't bicker or stew;

In extracting your tooth, I'll take longer with you."

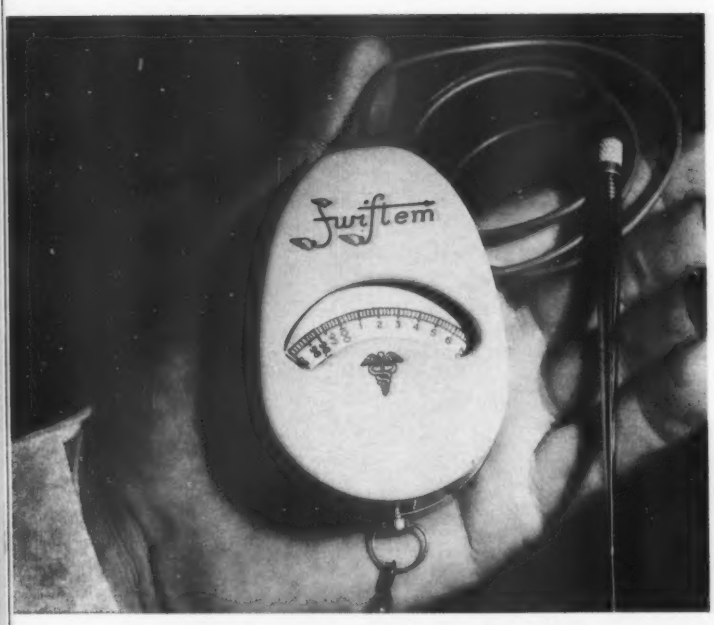
Roger W. Dana

Unique Thermometer Invented by Dentist

by Dick LaCoste

Credit an Army dentist for "the first change in clinical thermometers since the mercury-column type was introduced in 1867."

Trade-named Swiftem, the thermometer takes a patient's temperature faster than it takes to shake down the mercury type thermometer now in general use. It can be used for oral, rectal, or skin temperatures.



Swiftem fits snugly in a man's palm. At right is the stainless-steel probe, called a sending device.

The new electronic device looks much like a photographic light meter used by news photographers in determining the shutter speed of their cameras. It fits easily into a man's palm, and is operated by a finger button switch.

A small battery cell supplies the current at a speed calibrated to show changes of temperature on the meter.

Instead of the dangerous and slippery glass tube now in use, the new thermometer has a stainless-steel probe, or sending device, which is placed in the patient's mouth. The probe is connected by a flexible transmission cord to a mercury-cell battery in a plastic handpiece. On the handpiece is a meter which registers degrees of temperature.

Black figures (below the normal of 98.6 degrees F.) and red figures (above the normal) are easily read.

Developer of the revolutionary thermometer is Colonel George T. Perkins of the United States Army. Colonel Perkins, a native of Houston, Texas, received his Doctor of Dental Surgery degree at Washington University in 1929. The dentist said in an interview that he had been working on the device since 1951. He now is Director of the Dental Division of the Army Medical Service Graduate School at Walter Reed Hospital, Washington, D. C.

Colonel Perkins said he envisioned "having all the beds in a ward wired so that patients could place a thermometer under their tongues or arms and a nurse at a distant part of the ward could read their temperatures off a meter."

Thermometers now in general use depend upon the expansion of mercury when heated to get a temperature reading.

Colonel Perkins said his device can give an accurate temperature reading within five to seven seconds. Over a range of ten degrees, he added, it is accurate to within one-tenth of a degree. That figure compares with four- to eight-tenths in the conventional thermometers tested.

The first hospital model will cost approximately $75. A home model will cost between $15 and $25.

Colonel Perkins is married and has three children—two boys and one girl. During World War II, he was a prisoner-of-war for three and a half years.

Captain Mary Rukavina, U. S. Army nurse, takes the temperature of Sergeant Thomas L. Early of Rimersburg, Pa.

Dental Wives:

by Kay Lipke

"Well, what did you do with yourself all day?" With a tired grin, the dentist greets his wife at the door on his return from the office. Somehow, the unintentional accent on the words "all day" makes it sound as if she had spent ten long happy hours of holiday.

Mrs. Dentist begins to relate her list of daily activities, then suddenly sees them as nothing more than the same old assortment of dull housewifely chores.

There is a great gap between the viewpoint of a husband and that of a wife about what each does during the day. Most dentists, punching a figurative time clock as they do, feel a twinge of envy as they think of their wives with all those lovely hours to do with as they please, while the men battle to earn the family living at the office.

The wives, on the other hand, hopping from one necessary but insignificant chore to another—often in four different directions and miles apart—envy their husbands, who can go directly to the office where patients come to them by appointment, with a dental assistant at the elbow, and a regular schedule to follow. Then, too, there are all those contacts with interesting, stimulating people, and the well earned sense of accomplishment which a successful profession can bring.

Neither of these viewpoints is exactly correct. Mr. Dentist, in his office, is bombarded by a multitude of difficult problems. To be sure, his patients come to him by appointment but they come equipped with all their individual upset nervous systems and neuroses, and the impact is terrific on the dentist, not to mention the dental problems he is called upon to solve.

It is quite true that Mrs. Dentist has more time to herself during the day. She can relax for a half hour or so after her husband leaves for the office and the children have gone to school. She can have another cup of coffee and read the headlines and the women's section of the morning paper.

However, a swift glance at the clock soon stirs her from her feeling of peace and lazy well-being. She has a list a mile long of things to do. There are clothes to run through the washer, the house to be straightened, and a philanthropic morning comittee meeting halfway across the city to attend, with two people to pick up along the way.

Afterward there is the family marketing to do, and shopping for the children. Then home again to start split pea soup for dinner, and corn beef which can simmer all afternoon while she drives several miles out into the valley to visit her husband's mother who is not well. She stops on the way home to exchange some library books, order another load of wood, and collect clothes from the cleaner, trying to reach home before the children arrive laggardly from school. If she is lucky, she can squeeze in a bit of ironing before her favorite dentist gets home.

If she is an efficient housewife, she can handle her activities and have time left over for fun. In fact, there are periods when a rash of parties break out and she is away for luncheon two or three times a week. Her husband, on these occasions, thinks of her as a social butterfly having a gay whirl, and he wishes that he too had the freedom to see his friends and do as he pleases.

A reasonably efficient person can handle a social cycle and still keep the house spick and span, the clothes clean and the meals on time. However, far too few of us are able to systematize our lives. When we concentrate on housework all day, we feel like drudges, and when a bit of social fun comes along the dust lies deep in the living room and the meals are haphazard.

This is definitely hard on our favorite dentists, for they are far more aware of dust than most husbands, surrounded as they are all day by spotless equipment and shining walls. They demand efficiency in their offices and cannot help but be painfully aware of inefficiency in the home.

Perhaps, if we dental wives (in these practically servantless days) could look on our housewifely lives as careers, and organize our time as our husbands organize their offices, so that the day's activities could move along swiftly like business appointments, we would accomplish far more with less effort.

Of course, there is always the danger that once we become crisp, efficient career women in the home, our husbands might rise up and demand their old, happy-go-lucky haphazard little helpmates back again. Efficiency is often just the least little bit difficult to live with.

Doctor Lynch with his Wave staff at the San Diego Naval Hospital, 1944-1946

Doctor Lynch receiving his fellowship degree in the Royal College of Surgeons from Lord Webb-Johnson, President of the College. London, June 1948.

Dr. Daniel F. Ly A.D

by J

The most important dental post in the world is that held by the President of the American Dental Association.

That is so because the A.D.A. President speaks officially for the best trained dentists and the highest standards of dentistry in history—through the largest and most effective dental organization in existence.

Through the A.D.A. every dentist:

Speaks as with the strength and authority of 100,000. Builds the finest standards of dental education and dental practice known to man. Encourages research, public and voluntary, that promises to promote the oral health of the world.

Protects the dental profession against government encroachment—federal, state, and local—and all other non-professional interference that would threaten dentistry's freedom.

Unites all American dentists within an efficient effective organizational framework of common professional objectives and a wide range of mutual benefits.

Is kept in step with the march of dentistry everywhere in the world.

Naturally, the heads of the A.D.A. have been able, informed, and distinguished leaders of the profession. Ideally, an A.D.A. President should know something about: the problems, operations, and goals of dental practice in the United States; the status and needs of dental education; working with federal, state, and local legislative and administrative officials; the functions of national, regional, state, and local dental groups; the practice of dentistry in the armed forces; the levels of dentistry in other countries; the problems of interpretation and public relations in dentistry; the research needs of dentistry; and similar problems, possibilities, and objectives.

The current President of the A.D.A. is an outstanding example of the kind of men who have been chosen to speak for organized dentistry.

R LIVING

Ly A.D.A. President

by Jo rock

Daniel Francis Lynch does know something—a great deal, in fact—about each and every one of these, and other, areas of dentistry. Indeed, it seems that he has been preparing a whole lifetime for the official duties he is now discharging. A specialist in oral surgery, for more than a quarter-century he has filled an imposing variety of national and international roles with marked success:

EDUCATOR: Instructor, lecturer, visiting lecturer, and associate professor in oral surgery; lecturer in oral hygiene; and lecturer in, and professor of, anesthesia. Clinics staged in Sweden, England, and the United States; and lectures given in Argentina, Chili, Peru, Uruguay, Mexico, and the United States.

CONSULTANT: Military and civilian medical agencies and institutions.

AUTHOR: More than thirty papers in medical and dental journals, and contributions in reports and other books.

MEMBERSHIP AND HONORS: Member of a dozen dental and medical societies in the United States, South America, and Europe; honorary membership in thirty dental associations throughout the world.

OFFICIAL POSITIONS: President, Secretary of Research Commission, Chairman of International Relations Committee, Official Delegate, and Trustee for the 4th District (for six years) of the A.D.A.; official of several United States, South American, and European dental groups; member and adviser to the armed forces and civilian agencies of the United States.

Today, with almost thirty years of experience as dental leader, educator, student, practitioner, consultant, researcher, official spokesman, and adviser, Doctor Daniel Francis Lynch has become one of the best equipped and one of the best informed A.D.A. Presidents. Dentistry has a tremendous investment in him.

He proposes to make that investment pay dividends to every dentist.

A group of dental leaders, including Doctor Lynch, second from right, witness the signing of the bill that established the Institute of Dental Research at the National Institute of Health.

White House conference last year with President Eisenhower, Doctor Lynch, Doctor Leslie Fitzgerald, ADA president 1953-1954, and Senator B. Hickenlooper of Iowa.

How the A. D. A. Serves You

A statement by President Daniel F. Lynch

The American Dental Association was founded in 1859 "to encourage the improvement of the health of the public and to promote the art and science of dentistry". There are five classes of Association membership. The principal governing body of the Association is a House of Delegates, whose members are elected by state dental societies. The chief administrative body is a thirteen-member Board of Trustees elected by the House of Delegates. Constituent societies of the Association are, in most instances, composed of a number of district or local societies. Membership in the local or state society automatically includes membership in the American Dental Association. The Association is supported by dues of its members and the sale of advertising space in its official publications.

The Association carries on the following permanent programs:

1. The inspection and accreditation of dental schools.
2. The inspection and accreditation of hospital dental departments.
3. Administration of aptitude tests for prospective students of all the nation's dental schools.
4. Reviews of legislative, executive and military proposals affecting dentistry and dental health.
5. Approval of standards for dental specialty boards.
6. Sponsorship of dental research.
7. Evaluation of drugs and materials used in dental practice.
8. Maintenance of professional standards in keeping with the Association's "Principles of Ethics".
9. Cooperation with allied professional health groups, and liaison with dental organizations throughout the world.
10. Life, health and accident insurance programs with group rates for its members.
11. A relief fund for dentists and their dependents.
12. The world's largest dental library.
13. A package library service of current articles from the dental literature.
14. A scientific film and slide department.
15. An annual scientific session which features reports from authorities in all major dental fields.

Publications of the Association are:

The Journal of the American Dental Association; monthly.

The Journal of Oral Surgery; quarterly
Accepted Dental Remedies; annually
The Index to Dental Literature; quarterly
The American Dental Directory; annually

The Association also issues a variety of news letter, bulletins, pamphlets, posters, charts, visual aids, films, radio scripts, and transcriptions, news releases, and other dental health education and informational material.

The Association is continuing its nationwide program in support of fluoridation of community water supplies for the prevention of dental decay. By the end of 1954, more than 20 million persons residing in over a thousand communities were drinking fluoridated water. The campaign is part of the Association's overall program for emphasis on community action to provide preventive dental care for all children. The Association is continuing to conduct special surveys relating to dental practice and oral health habits. It also maintains an extensive program of dental health education through its 491 state and district dental societies.

Next Month—Part II

Operative Dentistry:

Part V–Contact Points and Separation

by Arthur Levine, D.D.S.

The human dentition is not a haphazard collection of hard and soft structure. It is a brilliantly designed mechanism composed of many parts. All parts, in the ideal dentition, are in perfect balance with each other; and each part plays an important role. One such part is the contact point. If a contact point is improperly restored, a chain reaction can be set off which may result in injury to the finely balanced mechanism.

What is a contact point? Here is one interpretation[1]: "The ideal form of contact point between two anterior proximating teeth is similar to that produced by placing two marbles together—the 'marble contact point'. This contact point on posteriors is more nearly a contact surface and should measure an average one and a half to two millimeters bucco-lingually and occluso-gingivally, being slightly wider bucco-lingually. The contact point is situated nearer the lingual embrasure on anterior teeth and to the buccal side on posterior teeth."

As interproximal wear continues through the years, the contact surface increases in size. In the masticating process, teeth rub against each other due to the slight movement of the teeth individually. In posterior teeth the worn surface is elliptical in shape with the long axis running from buccal to lingual. In teeth extracted from older patients the worn surface is easily visible.

Some men feel that the slight movement of the teeth interproximally helps keep them clean in that area. But the fact still remains that some patients have a natural resistance to interproximal decay while others exhibit a high susceptibility.

Concerning the significance of the worn, flat contact surface, Doctor Stanley D. Tylman[2] has this to say: "As patients grow older, it is found that the interproximal contacting surfaces lose their original convexities and develop flat facets. These result from the movement of the teeth against each other during function. In older patients there is likely to be a concomitant loss of alveolar bone and gum recession. Such flattened interproximal contacts give the teeth added support against the forces of mastication. Therefore, in restorations for older patients, the contacts are usually made less convex than for younger patients."

Nature has provided the contact point for the purpose of dividing the food in the chewing process so that the food is spread over the occlusal surfaces of the posterior teeth. Yet, the contact point must be tight enough to protect the delicate gingival tissue between the teeth.

Anyone who has had a faulty contact point knows how distressing it can be to chew fibrous meats and have it lodge between the teeth. Aside from the discomfort of the wedging action, the repeated assaults against the interproximal gingival tissue can cause serious damage.

Cause of Pyorrhea Pockets

"It has been estimated by some authors that eighty-five percent of pyorrhea pockets are caused by injury to the tissue in the interproximal space through the retention of food." Doctor C. N. Johnson[3] says. "This may be considered a rather exaggerated estimate, but unquestionably very many pockets have been started by this agency. If careful statistics could be made available it might be found that the estimate was, after all, not far wrong. In any event, there is no questioning the insistent need for the closest attention to this important matter. Every practitioner of dentistry should accept it as an article of his faith to have a keen appreciation of his obligation in preventing food from remaining between the teeth."

A. SHOWING THE CORRECT LINE OF CONTACT POINTS

B. THE INCORRECT

A cavity that starts between the teeth, particularly in the posterior region, usually involves the contact point. Once that is destroyed, the teeth drift together and cause, not only a faulty alignment with all its attending ills, but also a squeezing together of the gingival tissue in the interproximal space. A chronic irritation of the soft tissue with subsequent loss of alveolar bone is usually the result. Along with degeneration of the supporting structures, infection may occur. When it does, it is usually the suppurative type. This, in turn, can bring about a destruction of the soft tissue and supporting structures. If this is allowed to continue,

the result can be an extension of the periodontal condition with the ultimate loss of the affected teeth.

The inevitable conclusion to which all of this leads is the importance of the contact point and the responsibility of the dental practitioner in restoring it when it is lost.

One last word about contact points. Each dentition has its own tightness of contact. In some mouths it is almost a struggle to pass the dental floss through the contact point, so tight is it. Yet in others the floss meets almost no resistance. It is important, therefore, in restoring a contact point to test the tightness in other parts of the mouth, preferably a natural contact, with no fillings involved. With that in mind, the new contact point can be restored with the same tightness.

Separation

There are some procedures in dentistry which require the separation of teeth. Before going into the methods of accomplishing this, let us first explore the reasons for separation.

EXAMINATION: Separation can be helpful during an examination. Although X-rays, particularly bitewing X-rays, provide a quick and incontrovertible means of detecting interproximal decay, occasions do arise which require some separation. A common instance is the treatment of a first molar preliminary to banding the tooth by an orthodontist. In many instances, an invasion of the interproximal enamel has taken place although it is difficult, sometimes impossible, to detect in the X-rays.

Under ordinary circumstances, it would be good practice to consider the tooth sound and forget about it until a subsequent bitewing X-ray examination would bring it to light. No harm would come if the bitewing examination was made routinely at frequent intervals.

But in the case of a tooth to be banded the situation can be different. Given a teenager, with a rapid rate of decay and a break in the enamel covered for a considerable period by an orthodontic band, trouble might well ensue. In such a case, a break in the interproximal enamel could easily have been detected by an explorer provided some separation had been effected.

An orthodontist frequently finds this first evidence of decay when he uses separation prior to cementing the bands. Cooperation with the general practitioner is important at this point.

CONTACT POINT: Interproximal decay usually starts at or near the contact point. When the contact point is destroyed, the teeth involved tend to drift together. If this condition does not remain uncorrected for too long a period, it is possible, by separation, to restore the drifted teeth to their normal position. A restoration will then maintain the position permanently.

Even with the average cavity, without tooth drift, it is advisable to use separation before restoring the tooth interproximally. Enough space must be gained to make up for the thickness of the matrix material if for no other reason. But in addition, separation permits polishing of the interproximal part of the filling—polishing that will still guarantee a good contact point after it is finished.

APPEARANCE: In the anterior teeth, fillings that show are unsightly. In some cases, it is possible, by separating the teeth, to gain enough access to prepare a small cavity without breaking into the labial surface. Even with filling material that match the tooth, labial discoloration can be an annoyance.

INLAYS: In the preparation of inlays, particularly by the direct method, separation can be an aid. Interproximal finishing of the wax with linen strips can be accomplished without fear of having destroyed the contact point or without the necessity of having to guess at adding a drop of gold solder after the inlay has been cast.

Two Methods of Separation

Now for the methods of separating the teeth. There are two general ways. One is the slow method. The other is the fast method.

The slow method includes all devices for separating the teeth which continue to work after the patient has left the office. Orthodontic wire is an example of the slow method. It is run through the embrasure and then the two ends are brought together and twisted into a knot over the contact point, on the occlusal surface.

A popular method of slow separation with the general practitioner is the use of dental floss. A single or double strand of floss is wrapped with wisps of cotton by a rolling action of the fingers. This is then placed between the teeth (through the embrasure if necessary) and tied around the contact point. The knot lies on the occlusal surface between the teeth and the long ends are trimmed. The cotton slowly absorbs moisture and spreads the teeth. In addition, the biting action on the knot, as in the case of the orthodontic wire, spreads the teeth.

Where a cavity is already accessible, base-plate gutta-percha may be used for slow separation. Care must be exercised not to have too great an excess since biting stress from the opposing teeth may cause soreness. Also, this material should not be left too long since it does not produce a perfect seal. As a result, the dentine under it can become extremely sensitive.

Rubber separating strips are another means of separating the teeth slowly. The rubber is stretched

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The Removal of Root Tips Simplified

by Maurice J. Teitelbaum, D.D.S.

There is an old saying in the profession that the dentist who doesn't break roots doesn't extract any teeth. Even the most skilled practitioners have their share of apices despite careful technique, proper instrumentation, and years of experience. Curved roots, thick root ends, and dense osseous structures know no masters. At times careful diagnosis will reveal positive breakage and often surgical removal is dictated at the very start. Nevertheless, even in these cases we are often tempted to try our hand with the forceps before resorting to a flap.

There is never a smile upon the face of a dentist when he examines a molar clasped in the beaks of his forceps and finds that he got the entire tooth—except. The exception being a tiny root tip no more than a quarter of an inch in length. Sometimes extenuating circumstances, such as the health of the patient, proximity to the antrum and such, may dictate that the root tip be left in the socket, with the patient duly notified. However, in the vast majority of cases this bit of tooth which has become a "foreign body" must be removed. Very often the only way to remove the fractured tip is surgically. A flap must be made giving ample access to the area, the bone must be opened with a bur or chisel, and the exposed root tip shoved out through the socket with a pick or elevator. But before this method is initiated there are several simple ways of extricating the apex. They are easy, quick, and produce little or no trauma.

Before any method is attempted the socket should be dried carefully and viewed clearly. Good vision is of primary importance in any dental operation.

If the root has been loosened or displaced during the extraction, the following methods may be used to remove the remaining tip:

(1) If the apex is completely loose and its passage through the socket is not blocked by any bend in the bony wall, then an aspirator will often suck up such a tip.

(2) A fine tipped elevator may be inserted between the root end and alveolus and the apex flicked out. In using the elevator high in the socket, one must be careful not to exert too much pressure, for many a root tip has ended up in the antrum in this manner.

(3) If an elevator will not fit, a fine explorer may be inserted along the side of the root and when the apex is firmly engaged it may be teased downward. Once more care should be taken to work gently and not to force the instrument or it may break and add to your troubles.

When the root tip is firm and tight it will usually resist any coaxing or prying with elevator or explorer. In such a case you might try one of the following methods:

(1) Dry the socket thoroughly and then, with a number 2 or number 3 round bur revolving at a slow speed, enter the root canal. When the bur is firmly embedded in the canal, stop the engine and then, by pulling at the bur, the root will often come loose. A bur, gently used, may also be worked between the root tip and alveolus in order to make room for the insertion of an elevator.

(2) Another method that has been found useful to remove a small tip requires a root canal broach. The broach is carefully rotated up into the canal and then, when it is tight, the root can often be pulled out with the broach.

In any of these methods that you may choose to use, two things are most important: see what you are doing, and avoid excessive pressure—work gently and carefully.

Contact Points and Separation

(continued from page 12)

to make it thin. In this position it is forced between the teeth. The effort of the rubber to assume its original, thicker shape causes the teeth to separate.

The fast method of separation consists entirely of mechanical devices which are used while the patient is in the office. The Perry separator is an example of this type. As the screw is tightened, two metal wedges force themselves between the teeth, one wedge from the buccal and one from the lingual. As the wedges move towards each other the teeth are forced apart.

The fast method has many disadvantages and almost no advantage. It is painful for the patient and can result in damage to the contiguous structures of the tooth. Except for extreme emergencies, this method should never be used.

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Part IV of a series:

A Pictorial History of Dentistry
(The Middle Ages)—No. 2

by Curt Proskauer, D.M.D.

(See cover: Sculpture depicting the work of barbers, Church of Sant Marc, Venice, 10th Century)

The so-called Middle Ages embrace more than a thousand years; in our own time this would correspond to the period from about 800, the age of Charlemagne, to 1955. It is thus not possible to reduce all the events in this long period to a single common denominator.

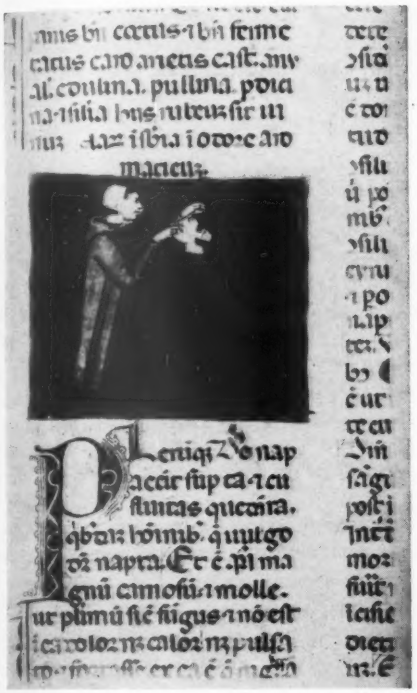
It is noticeable that many medieval writers on surgery make no mention at all of tooth extraction with instruments, recommending instead the application of pharmaceutical agents to the roots of diseased teeth, which shortly thereafter fall out without the help of instruments. But from certain other texts of the same period we find that the pulling of teeth with forceps was considered an unimportant procedure, a method to be practiced quite casually. The reason the bloodless pharmaceutical treatment is preferred—the application of henbane around the root of this tooth for instance*—may be that for many centuries care of the sick and treatment of diseases were exclusively in the hands of the clergy, chiefly inmates of monasteries. The church preferred them to use the natural, God-given sanative powers of the medicinal plants grown in their monastic gardens rather than the knife or forceps, crudely formed instruments which frequently fractured the tooth or even the jaw.

*"The rote (root) of the blacke Henbane mightly heat, and it be applyed to thy tothe that aketh (aches) and the rootes thereof, it wyll faull (fall) out by it selfe, incontynent, but beware lest it touche other teeth also, for then they wyl faul out as many as are touched therewyth. Of the same operacyon is the hearbe beinge rubbed upon the toth."

Tooth extraction as treatment of toothache

From Omne Bonum, 14th Century encyclopedia.

The surgeons who omitted all mention of extraction in their treatises did so because they themselves did not perform the operation but left it to the so-called tooth-pullers, who generally belonged to the barber class. Albucasis states in his *Chirurgia* that the extraction of teeth was very frequently performed by barbers. Three-hundred years later, in the work of the great French surgeon Guy de Chauliac, we find a passage referring to dental diseases which points out that operations on teeth were taken care of by the barbers and tooth-pullers and that physicians or surgeons did no extracting, entrusting it to these specialists. These latter were



Examination of the mouth from Chirwigia by Theodorico (about 1400).

called in as *periti artifices* (expert craftsmen) and *cum forcibus* (with forceps) they were able to extract the tooth "together with the root," so that the condition was not simply aggravated, as often happened when the physician left the stump of the root in the jaw. In 1314 the Oxonian John of Gaddesden writes that he has found an infallible nostrum for the extraction of teeth and for this has received a "nice piece of money from the barbitonsoribus," the barbers. From this statement we can conclude that at that time in England also tooth pulling was the work of the barbers.

There is rather a large number of miniatures scattered through the texts of medieval manuscripts depicting the surgeon examining teeth and mouth and treating dental and oral diseases, and also representing the tooth-puller busy with extractions.

Toothache "Cures"

There were, however, other ways of getting rid of toothache or avoiding such pain. The professor of medicine Petrus Hispanus, who later became Pope John XXI (died 1277), in his *Thesaurus pauperum*, (Treasure House of the Poor) recommends many strange remedies for toothache, "the pouder (powder) made of dogges (dog's) teeth put in to the toth (tooth) doth (does) put awai the tothach." Or, "the lyver (liver) of a stellyon (stallion) layde unto the tooth and doth ake, wyl (will) appease the ache incontinent." And another remedy: "myngle (mix) mans heare (man's hair) beynge bret (burned, wyth oyle of rosys (oil of roses), and put into thy eare, the greefe of thy toothe shall cease." Besides dog's and delphin's teeth, stallion's liver, and mouse ears, Petrus Hispanus, as a pious man, recommends another safe cure: prayers to Saint Apollonia, who herself suffered terrible pain when all her teeth were knocked out or extracted because, as a Christian, she refused to return to the old gods, make offerings to them, and "recite blasphemous sayings" along with the heathens. Her martyrdom during the persecutions under Emperor Decius, about the year 250, is immortalized in numerous pictorial representations; these show the various methods used—according to widely divergent reports—to "break out" her teeth. Most of the pictures portray the torturers drawing out her teeth by means of tremendously elongated pincers, in shape and dimensions better suited to the work of a blacksmith than that of a tooth-puller. On other pictures we see one torturer holding Apollonia firmly while the other, with the aid of a hammer and something similar to a chisel, knocks out her teeth. After this ordeal Apollonia besought heaven that all who were tortured by toothache might turn to her in prayer and obtain relief from their sufferings. In these dramatic presentations of Apollonia's martyrdom the artists imagine the teeth being extracted in the most horrible manner so that the torture is as impressive as possible, the gigantic dimensions of the instruments contributing importantly to the effect.

A favorite art subject: Saint Apollonia

ANGLES AND IMPRESSIONS

Dental Thisa and Data

The American Society of Anesthesiologists says that a new local anesthetic which acts faster and longer than procaine and has little or no after effect will be available for professional use very shortly. These drugs do not break down or lose their effect until they reach the blood stream.

Did you know that the farmer holding the pitchfork in Grant Wood's famous painting "American Gothic" is an Iowan dentist who posed for Wood? . . . A midwestern dentist has a unique hobby—raising sheep. It must be very convenient when he's stricken with insomnia to count sheep with which he is familiar . . . The next time a patient gets upset because you sent him a bill here's some good sense to pass on to him from the *Minneapolis Bulletin*: "It is an honor to receive a bill. Instead of getting riled up when the mail brings you a statement of account, you should be genuinely pleased. For a bill is an indication that some one has faith in your honesty. If you never received a bill, it would indicate that your credit is worthless and that no one is willing to take your word that you will pay." . . . This is the era of "bigness"—everything is done in a big way, so much so that the billion figure rolls off one's tongue as easily as a hundred. But did you ever stop to think just how much a billion is? Well, we played around with the idea and figured out that if you were able to extract a tooth a minute it would take you from now until the 39th century, 3858 A.D. to extract one billion teeth! And in terms of money, which somehow is more striking, if you had a billion dollars the accumulated interest of a year at 2% would be about 20 million dollars!

Gagging

A Broadway columnist reported that a movie usher asked a man who was down on his knees in the aisle what he was hunting. "A caramel" said the man. "All this fuss over a caramel!" exclaimed the usher. "Yes," said the man, "my teeth are in it!"

* * * * *

POSTGRADUATE LESSONS IN ANATOMY: The Mouth

The mouth is an interesting organ and can be easily located. It usually is found in the lower third of the face and is the place through which people speak. Sometimes the mouth is thought to be on the top of the head. This is because many people have been known to "talk through their hat."

When two people are conversing, the mouth of one opens and then, when it closes, the mouth of the other person opens. However, when women converse both mouths remain open indefinitely. When a woman converses with her husband and her mouth finally closes a strange phenomenon occurs—the man's mouth remains closed, but his wallet opens.

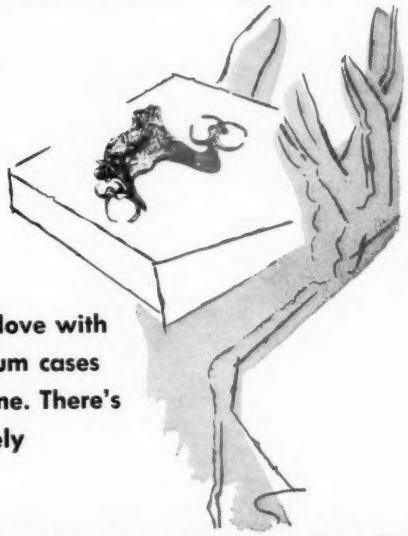
The mouth plays a very important part in the health of our nation. If there were no mouths there would be no dentists, and if there were no dentists the teeth of our people would be in a deplorable condition.

The mouth has a tongue and sometimes teeth, However, if you are lying on your side the mouth opens in a horizontal manner. The mouth is a very versatile organ.

The mouth varies in size. Very often it is so small that a dentist can hardly put his finger into it. Sometimes it is so large that one can easily put one's foot into it.

The mouth has a tongue and sometimes teeth, which may vary anywhere in number from 1 to 64—depending upon the number that are lying in the dresser drawer.

FITS... like a hand in a glove!



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